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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,699	02/22/2002	Mitsutoshi Nakamura	15162/04300	1268

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EXAMINER	
DI GRAZIO, JEANNE A	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 04/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/081,699	NAKAMURA, MITSUTOSHI	
	Examiner	Art Unit	
	Jeanne A. Di Grazio	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-13 and 15-17* is/are pending in the application.

4a) Of the above claim(s) *3 and 14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-13 and 15-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species A, image forming method I, Figures 5A and 5B, drawn to setting the liquid crystal to a crystal phase, forming a visible image, and discoloring with claims 1, 2, 4-13, and 15-17 readable thereon in Paper of December 30, 2003 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, and 4-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (JP-2000-247039 A) in view of Matsumoto et al. (JP-62-98322).

Per claims 1 and 10-12: Matsuda teaches and discloses a multicolor image recording method using cholesteric liquid crystal compounds and a multicolor image recording apparatus. Matsuda teaches: (1) heating a heat-sensitive recording layer containing thermotropic liquid crystal compounds between two substrates to a temperature indicating a cholesteric or isotropic phase, (2) cooling at a specified cooling speed to form a cholesteric phase, (3) then heating and cooling all or some of the areas of the heat-sensitive recording layer capable of recording images of selective reflection to record images of first selective reflection color, and (4) pressing all or some areas of the images of first selective reflective color for a prescribed time to change to a second reflective color (Abstracts).

While Matsuda teaches that the change in color from the first heating step may be brought about by pressing at least a part of an area of the image, Matsuda does not appear to explicitly specify a second heating step to allow a part of the image to discolor or to develop a color.

Matsumoto teaches and discloses a thermal writing type liquid crystal. Matsumoto teaches that the liquid crystal layer develops color through heat transmitted to the liquid crystal layer (Abstracts). Matsumoto teaches the step of developing color through heating the liquid crystal layer for the purpose of obtaining a distinct picture image display (Abstracts).

Matsumoto is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to apply heat to a liquid crystal layer to develop color in order to obtain a distinct picture image display of a thermal writing type liquid crystal.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Matsuda in view of Matsumoto for a distinct picture image display of a thermal writing type liquid crystal.

As to claim 2, it may be presumed that the image formed in the first heating process is a visible image.

As to claims 4-9, Matsuda includes the step of cooling. Furthermore, per Applicant's Response to Election of Species in Paper of December 30, 2003, "it is respectfully asserted that one skilled in the art would appreciate that a heating process can include steps of heating and cooling." (Pages 3 and 4)(Remarks, December 30, 2003).

Per claims 13 and 15-17: Matsuda teaches and discloses a multicolor image recording method using cholesteric liquid crystal compounds and a multicolor image recording apparatus. Matsuda teaches: (1) heating a heat-sensitive recording layer containing thermotropic liquid crystal compounds between two substrates to a temperature indicating a cholesteric or isotropic phase, (2) cooling at a specified cooling speed to form a cholesteric phase, (3) then heating and cooling all or some of the areas of the heat-sensitive recording layer capable of recording images of selective reflection to record images of first selective reflection color, and (4) pressing all or some areas of the images of first selective reflective color for a prescribed time to change to a second reflective color (Abstracts). Matsuda teaches the interposed step of cooling, thus, it may be presumed that there may be a difference in temperatures from one heating step to the other. Furthermore, it may be presumed that image colors vary with respect to background (Claims 15-17).

While Matsuda teaches that the change in color from the first heating step may be brought about by pressing at least a part of an area of the image, Matsuda does not appear to explicitly specify a second heating step to allow a part of the image to discolor or to develop a color.

Matsumoto teaches and discloses a thermal writing type liquid crystal. Matsumoto teaches that the liquid crystal layer develops color through heat transmitted to the liquid crystal layer (Abstracts). Matsumoto teaches the step of developing color through heating the liquid crystal layer for the purpose of obtaining a distinct picture image display (Abstracts).

Matsumoto is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to apply heat to a liquid crystal layer to develop color in order to obtain a distinct picture image display of a thermal writing type liquid crystal.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Matsuda in view of Matsumoto for a distinct picture image display of a thermal writing type liquid crystal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio

Patent Examiner
Art Unit 2871

Robert Kim, SPE

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